CLAIMS

What is Claimed Is:

1. A mechanism moving a slider toward a track on a disk surface in a hard disk drive, to minimize track mis-registration, comprising:

means for moving said slider parallel to said disk surface toward said track, when said disk surface is flat, by an actuator arm moving said slider by a lever action through a principal axis with said slider aligned at a bias angle;

wherein a read-write head is encapsulated in said slider facing said rotating disk surface about a radial center in a hard disk drive;

wherein said read-write head is communicatively coupled with said rotating disk surface to communicatively access said track; and

means for radially moving said slider toward said track when said disk surface is bent, by said lever action through said principal axis at said bias angle causing said slider to move radially toward said track, when said disk surface is bent.

2. The mechanism of Claim 1, wherein the means for moving said slider parallel said disk surface arm further comprises means for said actuator arm moving, through a flexure, said slider mounted to said flexure at a second bias angle to said principal axis;

wherein the means for radially moving said slider further comprising:

said flexure responding as said disk surface is bent, through said second bias angle, causing said slider to move radially toward said track.

3. The mechanism of Claim 2, wherein said flexure is mounted to said actuator arm at said second bias angle.

4. The mechanism of Claim 3, wherein at least two welds mount said flexure to said actuator arm at said second bias angle.

5. The mechanism of Claim 4, wherein at least two welds mount said flexure to a load beam coupled to said actuator arm at said second bias angle.

6. The mechanism of Claim 2, wherein said slider is mounted to said flexure at said second bias angle.

7. The mechanism of Claim 2, wherein said second bias angle is between one-half degree and three degrees.

8. The mechanism of Claim 7, wherein said second bias angle is between three-quarters degree and five-halves degrees.

9. The mechanism of Claim 1, wherein said actuator arm includes said slider attached through a flexure to a load beam and wherein said load beam is aligned to said principal axis at said bias angle.

10. The mechanism of Claim 9, wherein said actuator arm includes an extended base plate with a bent edge attaching to a bent edge of said load beam to create said load beam aligned to said principal axis at said bias angle.

11. The mechanism of Claim 9, wherein said actuator arm includes a mounting surface base plate with a bent edge attaching to said load beam to create said load beam aligned to said principal axis at said bias angle.

12. The mechanism of Claim 11, wherein said actuator arm includes said mounting surface base plate with said bent edge attaching to a bent edge of said load beam to create said load beam aligned to said principal axis at said bias angle.

13. The mechanism Claim 12, wherein said actuator arm includes said mounting surface base plate with said bent edge attaching through a connection beam to said bent edge of said load beam to create said load beam aligned to said principal axis at said bias angle.

14. The mechanism of Claim 9, wherein said actuator arm includes an extended base plate with a bent edge attaching to said load beam to create said load beam aligned to said principal axis at said bias angle.

15. The mechanism of Claim 14, wherein said actuator arm includes said extended base plate with said bent edge attaching to a bent edge of said load beam to create said load beam aligned to said principal axis at said bias angle.

16. The mechanism of Claim 15, wherein said actuator arm includes said extended base plate with said bent edge attaching through a connection beam to said bent edge of said load beam to create said load beam aligned to said principal axis at said bias angle.

17. The mechanism of Claim 1,

wherein said actuator arm is coupled to said load beam via a first finger and a second finger; wherein said first finger flexes differently from said second finger when said disk surface is bent; and

wherein the means for radially moving said slider further comprises said first finger flexing differently from said second finger flexing causing said slider to move radially toward said track, when said disk surface is bent.

18. The mechanism of Claim 17, wherein a width of said first finger differs from a width of said second finger to cause said first finger to flex differently from said second finger.

19. The mechanism of Claim 17, wherein a shape of said first finger differs from a shape of said second finger to cause said first finger to flex differently from said second finger.

20. A method of moving a slider toward a track on a disk surface in a hard disk drive, to minimize track mis-registration, comprising the steps of:

moving said slider parallel to said disk surface toward said track, when said disk surface is flat, with an actuator arm moving by a lever action through a principal axis with said slider aligned at a bias angle;

wherein a read-write head is encapsulated in said slider facing said rotating disk surface about a radial center in a hard disk drive;

wherein said read-write head is communicatively coupled with said rotating disk surface to communicatively access said track;

wherein said method further comprising the step of:

radially moving said slider toward said track, when said disk surface is bent, by said lever action through said principal axis at said bias angle causing said slider to move radially toward said track, when said disk surface is bent.

21. The method of Claim 20,

wherein the step moving said slider parallel said disk surface arm further comprising the step of:

said actuator arm moving, through a flexure, said slider mounted to said flexure at a second bias angle to said principal axis;

wherein the step radially moving said slider further comprising the step of:

said flexure responding as said disk surface is bent, through said second bias angle, causing said slider to move radially toward said track.

22. The method of Claim 21, wherein said flexure is mounted to said actuator arm at said second bias angle.

23. The method of Claim 22, wherein at least two welds mount said flexure to said actuator arm at said second bias angle.

24. The method of Claim 23, wherein said at least two welds mount said flexure to a load beam coupled to said actuator arm at said second bias angle.

25. The method of Claim 21, wherein said slider is mounted to said flexure at said second bias angle.

26. The method of Claim 21, wherein said second bias angle is between one-half degree and three degrees.

27. The method of Claim 26, wherein said second bias angle is between three-quarters degree and five-halves degrees.

28. The method of Claim 20,

wherein said actuator arm includes said slider attached through a flexure to a load beam;

wherein said load beam is aligned to said principal axis at said bias angle.

29. The method of Claim 28, wherein said actuator arm includes an extended base plate with a bent edge attaching to a bent edge of said load beam to create said load beam aligned to said principal axis at said bias angle.

30. The method of Claim 28, wherein said actuator arm includes a mounting surface base plate with a bent edge attaching to said load beam to create said load beam aligned to said principal axis at said bias angle.

31. The method Claim 30, wherein said actuator arm includes said mounting surface base plate with said bent edge attaching to a bent edge of said load beam to create said load beam aligned to said principal axis at said bias angle.

32. The method Claim 31, wherein said actuator arm includes said mounting surface base plate with said bent edge attaching through a connection beam to said bent edge of said load beam to create said load beam aligned to said principal axis at said bias angle.

33. The method of Claim 28, wherein said actuator arm includes an extended base plate with a bent edge attaching to said load beam to create said load beam aligned to said principal axis at said bias angle.

34. The method of Claim 33, wherein said actuator arm includes said extended base plate with said bent edge attaching to a bent edge of said load beam to create said load beam aligned to said principal axis at said bias angle.

35. The method of Claim 34, wherein said actuator arm includes said extended base plate with said bent edge attaching through a connection beam to said bent edge of said load beam to create said load beam aligned to said principal axis at said bias angle.

36. The method of Claim 20,

wherein said actuator arm is coupled to said load beam via a first finger and a second finger; wherein said first finger flexes differently from said second finger, when said disk surface is bent;

wherein the step radially moving said slider further comprising the step of:

said first finger flexing differently from said second finger flexing causes said slider to move radially toward said track, when said disk surface is bent.

37. The method of Claim 36, wherein the width of said first finger differs from the width of said second finger to cause said first finger flexing differently from said second finger.

38. The method of Claim 36, wherein the shape of said first finger differs from the shape of said second finger to cause said first finger flexing differently from said second finger.

39. A head gimbal assembly supporting the method of Claim 20, comprising, for each of the steps of Claim 20, a means for implementing said step.

40. Said actuator arm of Claim 20, comprising, for each of the steps of Claim 20, a means for implementing said step.

41. An actuator supporting the method of Claim 20, comprising, said actuator arm; and further comprising, for each of the steps of Claim 20, a means for implementing said step.

42. Said hard disk drive of Claim 20, comprising, for each of the steps of Claim 20, a means for implementing said step.

43. A mechanism moving a slider toward a track on a disk surface in a hard disk drive, to minimize track mis-registration, comprising:

means for moving said slider parallel to said disk surface toward said track, by an actuator arm moving a coupled load beam via a first finger and a second finger;

wherein said first finger flexes differently from said second finger when said disk surface is bent; wherein said slider is coupled to said load beam; and

wherein a read-write head is encapsulated in said slider facing said rotating disk surface about a radial center in a hard disk drive;

wherein said read-write head is communicatively coupled with said rotating disk surface to communicatively access said track; and

means for radially moving said slider toward said track, when said disk surface is bent, by said first finger flexing differently from said second finger flexing to cause said slider to move radially toward said track, when said disk surface is bent.

44. The mechanism of Claim 43, wherein the width of said first finger differs from the width of said second finger to cause said first finger flexing differently from said second finger.

45. The mechanism of Claim 43, wherein the shape of said first finger differs from the shape of said second finger to cause said first finger flexing differently from said second finger.

46. The mechanism of Claim 43, wherein said first finger couples to a top side of said load beam; and wherein said second finger coupled to a bottom side of said load beam.

47. The mechanism of Claim 46, wherein said first finger is formed by a first connection beam coupling said actuator arm to said load beam.

48. The mechanism of Claim 43, wherein the means for moving said slider parallel said disk surface arm further comprising:

means for said actuator arm moving, through a flexure, said slider mounted to said flexure at a second bias angle to a principal axis;

wherein the means for radially moving said slider further comprising:

said flexure responding as said disk surface is bent, through said second bias angle, causing said slider to move radially toward said track.

49. The mechanism of Claim 48, wherein said flexure is mounted to said actuator arm at said second bias angle.

50. The mechanism of Claim 49, wherein at least two welds mount said flexure to said actuator arm at said second bias angle.

51. The mechanism of Claim 50, wherein at least two welds mount said flexure to said load beam coupled to said actuator arm at said second bias angle.

52. The mechanism of Claim 48, wherein said slider is mounted to said flexure at said second bias angle.

53. The mechanism of Claim 48, wherein said second bias angle is between one-half degree and three degrees.

54. The mechanism of Claim 53, wherein said second bias angle is between three-quarters degree and five-halves degrees.

55. A method of moving a slider toward a track on a disk surface in a hard disk drive, to minimize track mis-registration, comprising the steps of:

moving said slider parallel to said disk surface toward said track, when said disk surface is flat, by an actuator arm moving a coupled load beam via a first finger and a second finger;

wherein said first finger flexes differently from said second finger when said disk surface is bent; wherein said slider is coupled to said load beam; and

wherein a read-write head is encapsulated in said slider facing said rotating disk surface about a radial center in a hard disk drive;

wherein said read-write head is communicatively coupled with said rotating disk surface to communicatively access said track; and

radially moving said slider toward said track, when said disk surface is bent, by said first finger flexing differently from said second finger flexing to cause said slider to move radially toward said track, when said disk surface is bent.

56. The method of Claim 55, wherein the width of said first finger differs from the width of said second finger to cause said first finger flexing differently from said second finger.

57. The method of Claim 55, wherein the shape of said first finger differs from the shape of said second finger to cause said first finger flexing differently from said second finger.

58. The method of Claim 55, wherein said first finger couples to a top side of said load beam; and wherein said second finger coupled to a bottom side of said load beam.

59. The method of Claim 58, wherein said first finger is formed by a first connection beam coupling said actuator arm to said load beam.

60. The method of Claim 55, wherein the step moving said slider parallel said disk surface arm further comprising the step:

said actuator arm moving, through a flexure, said slider mounted to said flexure at a second bias angle to a principal axis;

wherein the step radially moving said slider further comprising the step:

said flexure responding as said disk surface is bent, through said second bias angle, causing said slider to move radially toward said track.

61. The method of Claim 60, wherein said flexure is mounted to said actuator arm at said second bias angle.

62. The method of Claim 60, wherein at least two welds mount said flexure to said actuator arm at said second bias angle.

63. The method of Claim 62, wherein at least two welds mount said flexure to said load beam coupled to said actuator arm at said second bias angle.

64. The method of Claim 60, wherein said slider is mounted to said flexure at said second bias angle.

65. The method of Claim 60, wherein said second bias angle is between one-half degree and three degrees.

66. The method of Claim 60, wherein said second bias angle is between three-quarters degree and five-halves degrees.